SOME INTER-TIDAL MITES FROM SOUTH-WEST ENGLAND

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SYNOPSIS

The distribution of ten species of inter-tidal Acari from south-west England is given, together with descriptions of *Lasioseius fucicola* Halbert (1920) and *Chaussieria maritima* sp. n.

THE Acari of the inter-tidal zone comprise two main groups: those which are typically terrestrial and those which are restricted to the inter-tidal zone. The latter exhibit structural modifications associated with mites living under semi-aquatic conditions. The chief modification affects the ambulacra of legs II, III, and IV which become long, hair-like lobes—a structure assisting the movement of the animal over a permanently moist substratum. Leg I, which is not usually used for locomotion, is normal.

The inter-tidal Acari do not show any modification in the organs associated with respiration. This suggests, as Halbert (1920) has pointed out, that these animals are not enveloped by the sea water but inhabit crevices, &c., where air is imprisoned during high tide. Many species of mites are found under deeply embedded stones together with springtails, beetles, and pseudoscorpions. Others (*Balaustium*, *Molgus*) run freely on rocks at low tide, especially in sunny weather, but are forced to seek the shelter of rock fissures, &c., by the incoming tide.

The major contribution to the study of sea-shore mites has been made by Halbert (1920). This investigator studied the distribution of Acari in relation to certain zones occupied by lichen and seaweeds. The richest population occurred in the zone lying between neap and high spring tide, a zone left dry for relatively long periods. There followed a marked decrease in the variety of forms towards low-tide marks. This was chiefly due to the absence of the terrestrial forms which formed the majority of the species around high-tide mark. Twelve species were recorded for the zones normally covered by the two daily tides.

The Acari described in this paper were collected by one of us (E. B.) during mid-summer in 1947 and 1949. The collecting was by no means exhaustive and was restricted to the area between low- and high-water marks in the following localities:

Devon

1. 'The Nest', Babbacombe, 11.7.1947, on rocks between tide marks.
2. Rock End, Torbay, 12.7.1947, on rocks between tide marks.
3. Carbons Head, Torbay, 13.7.1947, on rocks between tide marks.
4. Livermead, Torbay, 15.7.1947, on rocks between tide marks.
5. Oddicombe Beach, Babbacombe, 15.7.1947, on rocks between tide marks.
6. Carbons Head, Torbay, 17.7.1947, under stones below high-water marks.
7. Meadfoot Beach, Torbay, 18.7.1947, under stones below high-water marks.

Dorset

8. Peveril Point, Swanage, 14.7.1949, under stones below high-water marks.

MESOSTIGMATA

GAMASIDES

Parasitus kempersi (Oudemans 1902)

This is a species characteristic of the region between the high-water marks. Halbert (1920) records it as occurring abundantly under stones or seaweeds and also in moist shelly-sand and gravel where there are but few other species of mites. In the present investigation it was collected in relatively large numbers under stones below high-water mark at Meadfoot Beach, Torbay, and at Peveril Point, Swanage. In both cases the specimens were deutonymphs.

Eugamasus trouessarti (Berlese 1905)

According to Halbert (1920) this is an abundant species occurring in a variety of habitats in the intertidal zone. He records it from several localities in Ireland and Hull (1918) also records the species from Budle Bay, Northumberland. In the material from southern England it occurred only under stones below high-water mark at Carbons Head, Torbay.

Cyrthydrolaelaps hirtus Berlese 1905

A species occurring well below high-tide marks and showing the ambulacral modification associated with Acari inhabiting wet places. According to Halbert (1920) the nymphal stage occurs higher up the shore than the adult. One female and two protonymphs (♂) were collected at Rock End, Torbay, and one female at Carbons Head, Torbay. On both occasions the mites were collected on rocks between tide marks.

Halolaelaps marinus (Brady 1875)

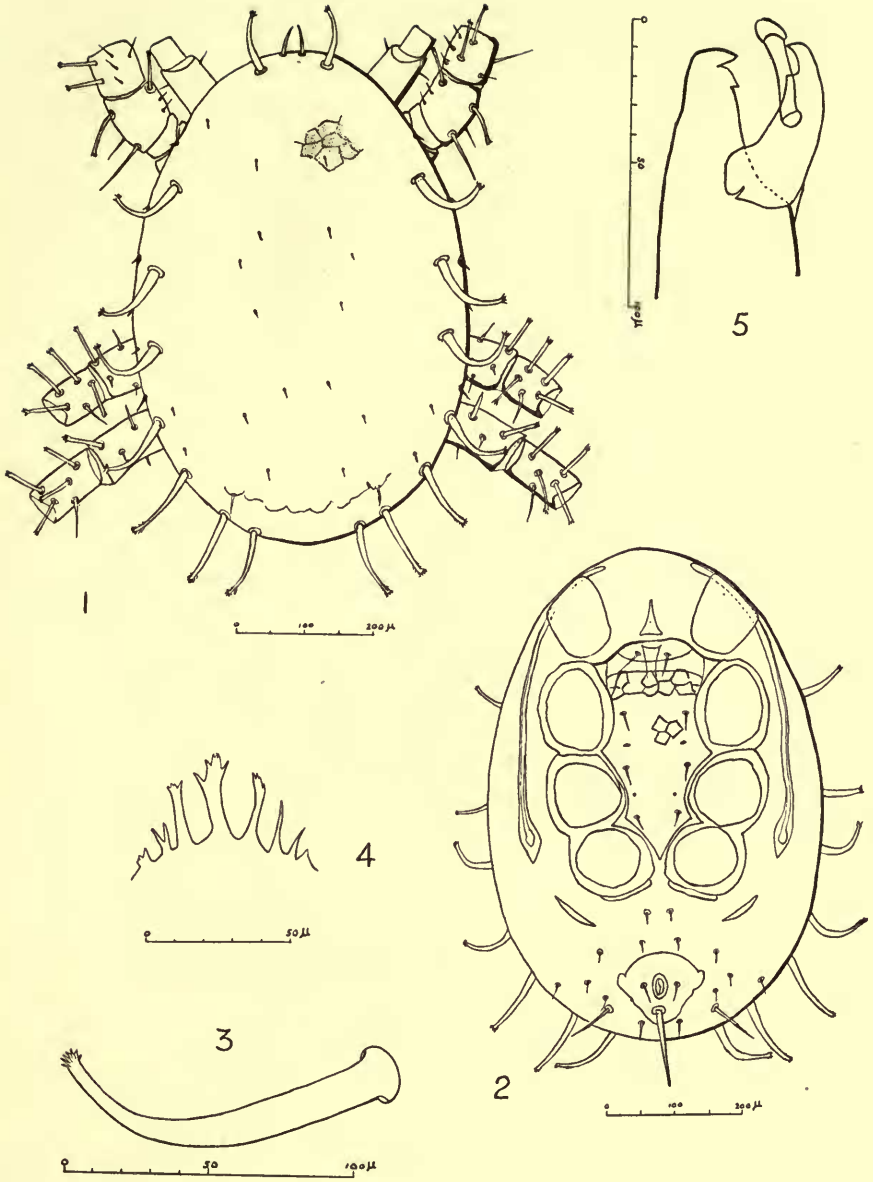
(= *Halolaelaps glabriusculus* Berlese and Trouessart, 1889)

As in the preceding species the ambulacra are modified and comprise a pair of flattened central lobes and a pair of long acute lateral lobes. It has been recorded by Halbert (1920) from Ireland and by Hull (1918) from a number of localities in northern England. One female occurred together with *Crythydrolaelaps hirtus* on rocks below high-tide marks at Carbons Head, Torbay.

Lasioseius fucicola Halbert 1920[1]

This interesting species was first described by Halbert (1920) from two males, one collected under seaweeds washed out of the Orange lichen zone at Malahide, Ireland, and the other from Swanage. The latter was included in a collection of littoral mites sent to Halbert by A. D. Michael. These appear to be the only published records of the species to date. During the present study a male and two deutonymphs of the

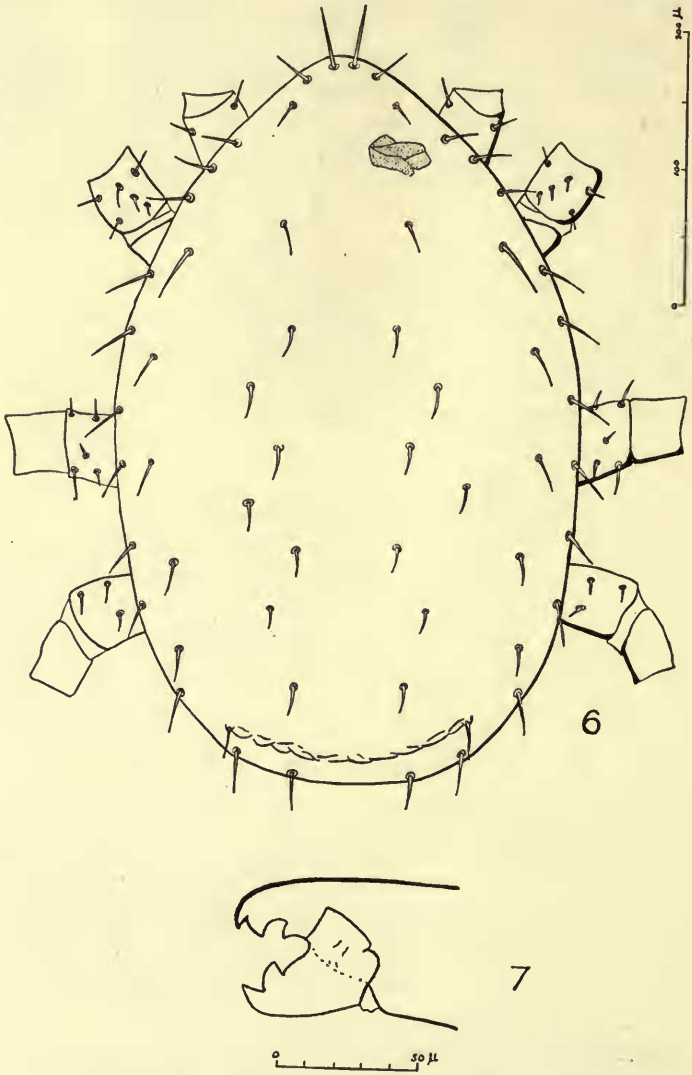
[1] Since going to press we have received a number of males and females of this species for identification. The females have proved to be identical with *Thinoseius berlesei* Halbert, 1920. Due to page priority the latter becomes a synonym of *L. fucicola.*



FIGS. 1–5. *Lasioseius fucicola* Halbert, male. 1. Dorsal view. 2. Ventral view. 3. Dorsal spine. 4. Epistome. 5. Mandible.

species were found under stones at Peveril Point, Swanage. A redescription of the male and a description of the hitherto unknown deutonymph is given below:

Male (Figs. 1–5). Body oval, slightly flattened posteriorly. Length 0·737 mm.,



FIGS. 6–7. *Lasioseius fucicola* Halbert, deutonymph.
6. Dorsal view. 7. Mandible.

breadth 0·495 mm. The dorsal surface strongly reticulated and covered with fine punctations. The reticulations become stronger posteriorly and assume a scale-like appearance. On each side of the dorsum a row of eight strong spines, smooth except for a clump of short spines distally (Fig. 3). The first pair situated postero-lateral to the pair of shorter vertical spines. The remainder of the chaetotaxy of the dorsum is

composed of short setae arranged as shown in Fig. 1. Sternal shield V-shaped terminating in a marked point between coxae IV and with sharp projections between coxae II–III and III–IV. It is strongly reticulated and bears the normal four pairs of hairs and three pairs of pores. Metapodalia elongate and situated postero-lateral to

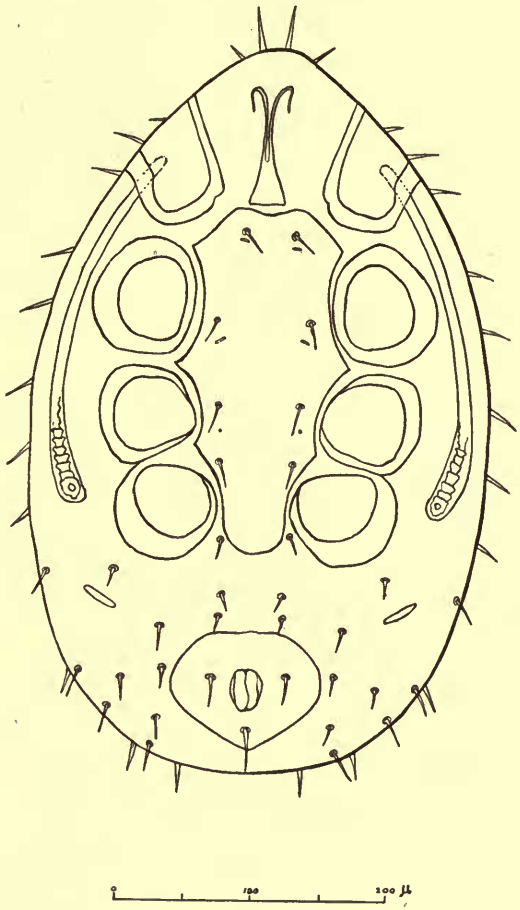


FIG. 8. *Lasioseius fucicola* Halbert, deutonymph.
Ventral view.

coxae IV. Stigma situated between coxae III and IV and peritremata extending beyond the level of coxa I. Anal shield small, semicircular anteriorly but tapering to an obtuse point posteriorly. One seta each side of anal opening and a large strong terminal spine projecting beyond posterior border of the body. Epistome multidentate, terminal portions branched (Fig. 4). Segment I of maxillary palps with two strong blunt spines ventrally, segment II with five shorter spines of which three are dorsal. Digitus fixus and digitus mobilis of mandible unidentate (Fig. 5). Digitus mobilis with a strong club-like process issuing from about the middle of the digit and a marked cleft posteriorly. Legs, excluding first pair, strongly formed and carrying

strong spines—the majority of these are of the same form as the eight pairs of large dorsal spines. Ambulacra with two terminal hairs.

Deutonymph (Figs. 6–8). Dorsal shield, length 0·55 mm., breadth 0·33 mm., more pointed than in the male, chaetotaxy composed of simple spines arranged as in figure. Ornamentation (reticulations and punctations) as in male. Sternal shield V-shaped with posterior end rounded and terminating almost in line with the posterior border of coxae IV (Fig. 8). Shield strongly projecting between coxae II–III, III–IV and with normal four pairs of setae and three pairs of pores. Metapodalia as in male. Stigmata situated between coxae III and IV, peritremata extending to the middle of coxa I. The three setae on the anal shield of approximately the same length, the terminal one not projecting beyond the posterior edge of the body. Epistome as in the male. Digitus fixus of mandible bidentate, digitus mobilis unidentate (Fig. 7). All spines on legs I–IV simple.

PROSTIGMATA

Trombidiformes

Molgus littoralis (Linné, 1758)

One of the largest and most conspicuous mites occurring in the inter-tidal zone. It is often observed running freely over the rocks during sunny weather, but retreats into rock fissures, &c., before the incoming tide. The species was found at Babbacombe, Carbons Head, and Livermead.

Bdella ?decipiens Thorell, 1872

A nymph probably referable to this species was found on one occasion with *Molgus littoralis* (Linné) on rocks between tide marks at Babbacombe.

Balaustium rubripes (Berlese and Trouessart, 1889)

(= *Ritteria hirsutus* George, 1910)

A brightly coloured mite occurring in large numbers below high-water mark on the coasts of France and the British Isles. Trouessart (1888) and Halbert (1915) observed it occurring abundantly on rocks covered with *Balanus balanoides*. We have found this species in quantity at Carbons Head, Livermead, and Oddicombe Beach. The majority of specimens appeared to have discarded their legs on being placed in Oudemans fluid.

Balaustium araneoides (Berlese, 1910)

This species was first described by Berlese from specimens collected at Palermo, Sicily. Halbert (1920) recorded it from Malahide, where it occurred abundantly on limestone rocks below high-water mark. Our specimens were collected with *B. rubripes* on stones between tide marks at Oddicombe Beach. The crista conforms with that figured by Halbert (1920).

Chaussieria maritima sp. n.

Oudemans (1936) in his revision of the family Anystidae erected the genus *Schellenbergia* with *Erythraeus domestica* C. Koch (1847) as the type of the genus. In 1937 the same author substituted the name *Chaussieria* for *Schellenbergia* which was preoccupied. The characters of the genus *Chaussieria* are as follows (Oudemans, 1936):

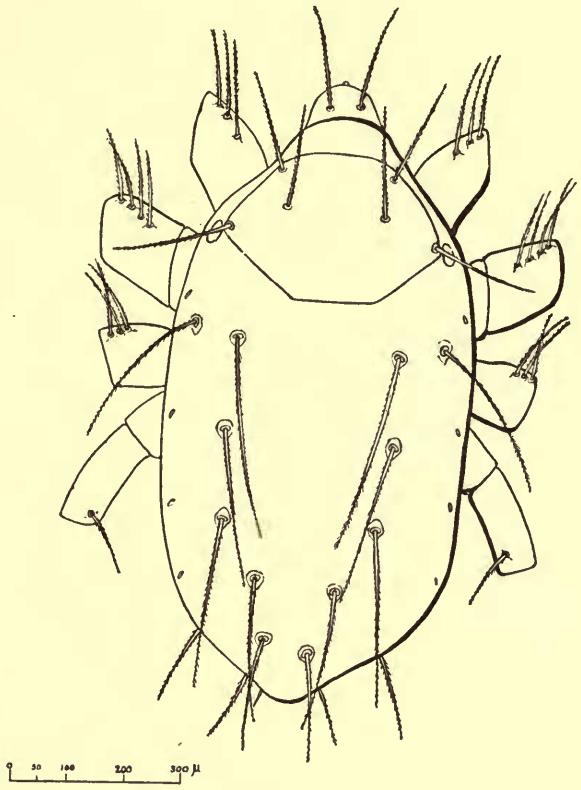
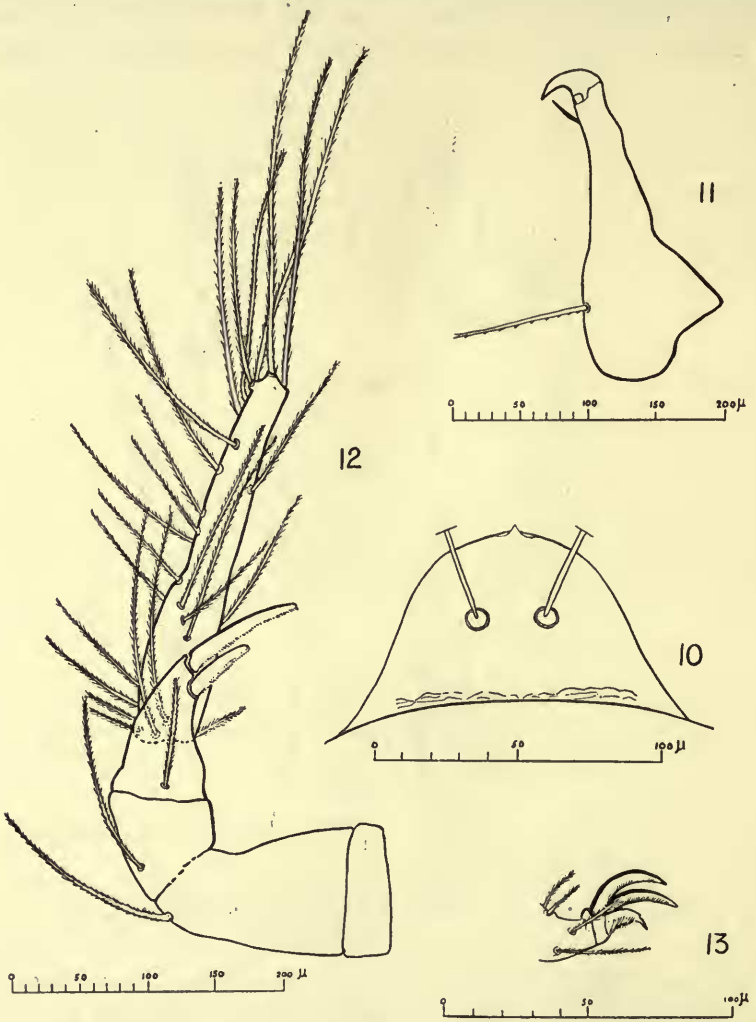


FIG. 9. *Chaussieria maritima* sp. n., female.
Dorsal view.

Two eyes. Dorsal shield broader than long. Dorsal setae arising from plate-like structures. Peritremata ⌒ shaped, becoming broader distally with its ends projecting freely. Four pairs of lentiform organs ('linsenförmiger' organs). Mandibles with two setae. Epivertex ('Kissen') with a small terminal projection. Basi and telofemur of all legs fused, tarsus shorter than tibia and subdivided into a long basitarsus and a shorter telotarsus. Coxae almost touching along the median line. Male unknown?

Female (Figs. 9–14). Body almost elliptical (Fig. 9). Length 0·97 to 1·03 mm. Breadth 0·33 to 0·35 mm. Colour, in preserved specimens, reddish brown. Body extended anteriorly into a conspicuous epivertex ('Kissen') carrying a pair of pseudostigmatic organs midway along its length. Epivertex with small terminal projection

(Fig. 10). Peritremata normal for the genus. Dorsal shield broader than long and with three pairs of long finely feathered setae. External scapular setae 1·97 mm. long. Two eyes situated one on each side of the lateral corner of the shield. Remainder of



FIGS. 10–13. *Chaussieria maritima* sp. n., female. 10. Epivertex. 11. Mandible. 12. Maxillary palp. 13. Claws and empodium of tarsus.

dorsum with six pairs of finely feathered setae arising from plate-like structures. Setae becoming progressively shorter towards the posterior end of the body. Four pairs of lentiform organs. Coxae cylindrical and almost meet in the middle line. Genital plate long and narrow with two longitudinal rows of feathered setae (Fig. 14). External row reaching to less than half-way along the plate. Posteriorly on each side of the genital plate a row of approximately thirty feathered setae running parallel

with the hind margin of the body. A number of the setae project beyond the margin of the body. Anterior-laterally, on each side, a row of more widely separated feathered setae. Mandible (0·22 mm. long) with two setae, proximal one long and feathered, distal one short and smooth (Fig. 11). Palp strong, with a long tarsus (approximately equal in length to the remainder of the palp) (Fig. 12). Division between palp femur and palp genu incomplete. Femurogenu (0·17 mm.) with two setae and terminating

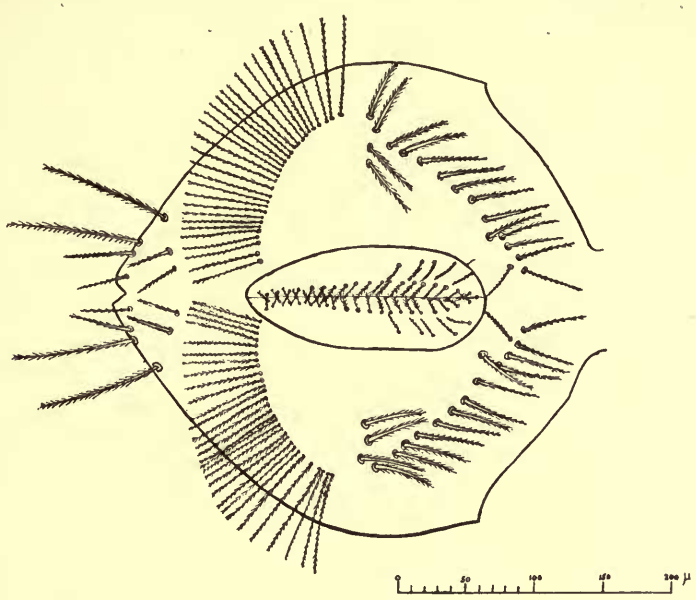


FIG. 14. *Chaussieria maritima* sp. n., female. Ventral view posterior to coxae IV.

in two strong claws; secondary claw being the shorter. The long palp tarsus (0·28 mm.) thickly covered with setae. The three longest terminal setae 0·22 mm. in length. All the setae on the palp are feathered. Legs long and thickly covered with strong feathered setae. Leg I 1·20 mm., leg II 1·45 mm., leg III 1·15 mm., leg IV 1·81 mm. The short telotarsus terminates in two claws and an empodium (Fig. 13).

Locality. Five females collected from stones between tide marks on Oddicombe Beach, Babbacombe, South Devon.

This species is closely related to *C. venustissimus* (Berlese, 1882), from which it may be separated by the following characters:

Genital plate narrower, not extending far between the posterior row of feathered setae. Setae of this row more numerous (30 either side of the middle line as opposed to about 12 figured for *C. venustissimus*), a number extending beyond the hind margin of the body, and all setae feathered along their entire length. In his description and figure of *C. venustissimus*, Berlese (1882) has shown these setae to be feathered distally only. Terminal setae of the maxillary palp longer.

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